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Guest Editorial

Selected Papers From 6th NEW2AN Conference

This special issue presents extended versions of the best papers published in the proceedings of the 6th NEW2AN (Next Generation Teletraffic and Wired/Wireless Advanced Networking) held in St.Petersburg, Russia, on May 29 – June 2, 2006. The extended versions of ten original papers went through a tough evaluation and only seven have been accepted for this special issue. The conference itself attracted 137 papers from 27 countries. With the help of excellent Technical Program Committee and a number of associated reviewers, the best 49 high-quality papers were selected for publication, resulting in acceptance ratio of 35%.

The conference proceedings contain contributions to next generation teletraffic with focus on traffic characterization, estimation of traffic parameters, and modelling of new services based on real data and experiments. New methods for designing dynamic optimal systems were presented. In particular, issues of Quality of Service (QoS) in wireless and IP-based multi-service networks are dealt with, as well as economical aspects of future networks. The presentations in the scientific program provided also new contributions to various aspects of networking, with strong emphasis on wireless networks, including cellular networks, wireless local area networks, personal area networks, mobile ad hoc networks, and sensor networks. New and innovative developments for enhanced signaling protocols, QoS mechanisms, and cross-layer optimization were also well represented within the program of the NEW2AN 2006.

The papers presented in this special issue address several very important and integral topics of Next Generation Networks.

The first paper "On the Queue Length Distribution in BMAP Systems" by A. Chydzinski addresses the area of theoretical teletraffic investigations, in particular the paper studies the queue length distribution of a finite-buffer queue fed by the BMAP process. The obtained formula gives the possibility to obtain both transient and stationary characteristics.

The next three papers address the area of MANETs and PANs. In "A New Distributed Slot Assignment Algorithm for Wireless Sensor Network under Convergecast Data Traffic" by I. Bekmezci et al., a new delay sensitive and energy efficient distributed time slot assignment algorithm (DTSM) for wireless sensor networks is developed. It is shown that DTSM performs better than existing algorithms. For particular cases of convergecast traffic, DTSM also overcomes the problem of the same slot assignment within two hop neighbors normally appearing due to hidden node.

In "Adaptive Channel Access Mechanism for Zigbee (IEEE 802.15.4)", V.P. Rao et al., present an adaptive backoff exponent mechanism to the current IEEE 802.15.4 CSMA/CA channel access algorithm. The proposed mechanism was implemented in ns2 environment. Simulation study has shown its efficiency, and potential packet collisions have been reduced.

In the next paper "Ingress Throttling and its Applications in IEEE 802.11 Based MANETs" by E. Osipov et al., the authors consider the problem of unfairness between multiple multihop TCP flows in a wireless ad hoc network. The ingress throttling, a resource protection layer which restores fair bandwidth sharing between plain TCP as well as arbitrary UDP sources, has been introduced and described. Analytical as well as simulation studies of the proposed solution are explored. Based on the properties of the ingress throttling, a methodology for an indirect measurement of the routing load and quantification of the routing effect on TCP performance was developed. This paper won the "NEW2AN 2006 best paper award".

The next two papers address issues on location services in UMTS and NGN. In "Middleware-controlled Resource Consumption for Location Traffic in Cellular Networks" by I. Martin-Escalona et al., a middleware to reduce the consumption of network resources and optimization of the location traffic is proposed. This middleware, MILCO (Middleware for Location Cost Optimization) selects the optimum location technique depending on the request. MILCO also takes advantage of ongoing and carried location processes to reduce the overall expenditure of resources. The obtained results show the capability of MILCO to reduce location process failures and improve latency for location provisioning and resource use in cellular networks such as UMTS.

In "Conveying and Handling Location Information in the IP Multimedia Subsystem" by M. Mosmondor et al., the authors present the design and implementation of an IMS Location Server (ILS) integrating IMS with a positioning system. Novel location-enhanced IMS services were developed and integrated with the Ericsson MPS to provide a basis for performance measurements related to signaling. Moreover, the paper proposes improved SIP location conveyance, primarily related to reducing signaling burden.

In the last paper of this special issue, "VoIP call admission control in WLANs in presence of elastic traffic" by B. Bellalta et al., performance of VoIP communications with simultaneous presence of bi-directional TCP traffic in IEEE 802.11e EDCA environment is addressed. The authors proposed a novel user-centric model based on $M/G^{[1,B]}/1/K$ model capturing the main impact of the use of different MAC parameters for each Access Category. The model was used to evaluate an admission and rate control algorithm based on tuning the CW_{min} parameter of BE flows. The obtained results prove the improvement achieved by the proposed scheme.

Finally, the editors hope that this special issue provides an interesting selection of high quality papers originated from the NEW2AN 2006 conference. We would like to thank all the authors of the NEW2AN 2006 conference and thank all reviewers for their efforts and valuable contributions. The proceedings of the NEW2AN 2006 are available from Springer publishing house, LNCS 4003.

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